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May 2, 1953

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SCIENCE NEWS LETTER®

THE WEEKLY SUMMARY OF CURRENT SCIENCE

Spring Hunger

See Page 275

A SCIENCE SERVICE PUBLICATION

Pipes that grew without getting bigger

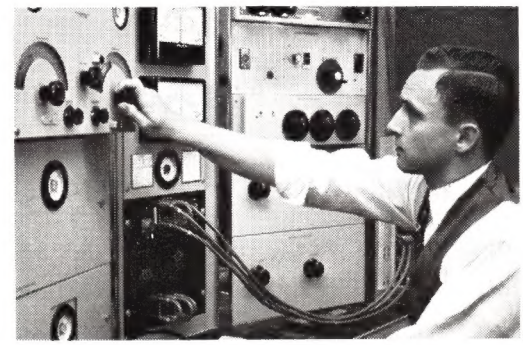
Cross-section of coaxial cable. To triple capacity, Bell Laboratories and Western Electric engineers had to make 1000 amplifiers work perfectly in tandem . . . feed repeater power along the same cable that carries messages . . . put signals on and off the line at numerous cities along the route without distortion.

Pencil-size pipes carry telephone messages and television across country through the Bell System's coaxial cable. Once, each pipe could carry 600 voices, or one television program. Now it can carry 1800 voices, or 600 voices *plus* a broadcast quality television program.

Yet the pipes aren't any larger. They are being made into triple-duty voiceways by new repeaters, new terminal equipment and other transmission advances developed by Bell Laboratories engineers.

The conversion expense is less than the cost of laying extra coaxial cables. But it calls for highly refined manufacturing procedures, made possible only by close co-operation of Bell Laboratories and Western Electric, manufacturing unit of the Bell System.

In improving the coaxial cable system, they created more than 20 years ago, engineers at Bell Telephone Laboratories devised a new way to give America still better telephone service, while the cost stays low.



Laboratories engineer tests new triple-duty coaxial system. It marks the first time that telephone conversations and television can travel through the same pipes at the same time. With a wider frequency band being transmitted, big problem was to eliminate interference between the two types of signals.

BELL TELEPHONE LABORATORIES

Improving telephone service for America provides careers for creative men in scientific and technical fields

RADIOLOGY

Neutrons Hit Brain Cancer

Treatment of fatal type of brain cancer with neutrons brings temporary relief. The beneficial effects and lack of harmful results warrant "further exploration" of this method.

➤ TEMPORARY RELIEF of symptoms in an always fatal type of brain cancer has been achieved by treatment with neutron radiation from the reactor at Brookhaven National Laboratory, Upton, Long Island, N. Y.

This much in the way of good effects in the first ten patients was announced by Dr. Lee E. Farr, director of the medical department at Brookhaven, at the meeting of the American Radium Society in St. Louis.

Dr. Farr's is the first report of the Brookhaven brain tumor research made to a scientific group.

The treatment cannot be called a cure. All ten patients are now dead. But the good effects so far and the lack of harmful effects warrant "further extensive exploration" of this treatment as a means of controlling the disease, Dr. Farr said. He and his group are encouraged but it will be some months before they are ready to treat the eleventh patient. They are trying now to improve the instruments in the hope of getting better results.

One of the first ten patients lived nine months after the first neutron treatment. He had three treatments. One patient, who got only one short treatment, lived only 43 days after. The others lived varying periods between. One recovered sufficiently to go to Florida for a visit before he died. Others have recovered enough to get up and about.

The patients had previously been operated on at Massachusetts General Hospital in Boston and then were transferred to Brookhaven for the neutron treatment. Just before this treatment a borax solution, made from boron 10, was injected into one of the patient's veins. The patient's head was then positioned over the radiation port of the reactor and fixed with cotton web straps weighted by lead bricks.

The reactor was then brought to full power as rapidly as could be done with safety. This takes about eight to ten minutes. About 40 minutes of neutron radiation was then given, except in the case of the first patient who got only 17 minutes.

The boron, which has reached its maximum concentration in the brain tumor tissue within 15 minutes, "captures" the neutrons from the reactor and then gives off alpha particles with some gamma rays and neutrons.

This radiation, if intense enough, could annihilate the tumor while leaving normal surrounding tissue intact. Actually, in the patients so far treated, the radiation has had a very destructive effect on the tumor with little or no damage to healthy tissue, examination after death showed.

Working with Dr. Farr in treatment of the patients at Brookhaven were Drs. James S. Robertson, Charles G. Foster, Herbert B. Locksley, D. Lawrence Sutherland, Mortimer L. Mendelsohn and E. E. Stickley, and Dr. William H. Sweet at Massachusetts General Hospital in Boston.

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ORNITHOLOGY

Baby Robins Making Springtime Debut

See Front Cover

➤ FAMILY RESPONSIBILITIES are overtaking erstwhile carefree birds, as the cover on this week's SCIENCE NEWS LETTER illustrates. These little fellows will keep both mama and papa robins on the wing hunting worms and grubs until they are big enough to tumble out and try their own wings.

In a few weeks, you may see a very ugly bird with a great big mouth and a brown speckled breast on the lower branches of a tree. This will be no undescribed species, but Junior robin on his own. The typical red breast of the robin will come later in life. This speckled breast, however, serves as a reminder that robins are close kin of the handsome speckle-breasted thrushes.

Incidentally, poor Cock Robin, who was shot by the Sparrow's bow and arrow, is not the same as our American robin. The European robin is a smaller bird, about the size of our bluebird.

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MEDICINE

Sex Hormones Studied As Cause of Cancer

➤ SEX HORMONES, particularly in cancers of the breast, play some role in the amount of susceptibility to cancer. They also are used in the treatment of some cancers with varying degrees of success. But no one knows just how much or how many different kinds of female sex hormones are produced by women of 20 to 40 years of age.

Refinements in measuring these vital substances are being worked out by Drs. E. Stewart Taylor and Rudolph Anker of the University of Colorado.

They already know about three types of female estrogen, but they have discovered evidence that there might be more. They plan to measure the excretion of hormones in urine by both chemical and paper chromatographic methods.

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GIANT FUSELAGES—Shown being loaded for shipment from the Ryan Aeronautical Company yards at San Diego, Calif., these five giant aft fuselage sections are for the Boeing C-97 Stratocruiser, which can be used as a cargo carrier, a flying ambulance or an aerial tanker.

BIOPHYSICS

Odor Detection Theory

Understand method of detecting smells by comparing process to computers' workings. Theory agrees with experimental evidence trained persons can tell 30 intensity levels.

➤ HOW A person detects odors can be understood by comparison to the way computers work, Dr. Raymond M. Hainer, Dr. Alfred G. Emslie and Miss Ada Jacobson told a conference sponsored by the New York Academy of Sciences and the American Society of Heating and Ventilating Engineers in New York.

The sense of smell was investigated using the theory of cybernetics. The nervous control system for sensing odors and transmitting such information to the brain was compared with the mechanical electrical systems, such as computing machines.

After studying tests showing how well people can smell, the physicists imagined a nerve network that would get this information to the brain. Then they found devices and connections in the body that seem to handle the odor information in much the same way as a computer handles its instructions.

People can learn to recognize at least 10,000 distinct odors and can detect fantastically tenuous odors, but are quite poor at distinguishing a strong odor from a slightly weaker one of the same kind.

Each nostril, they reported, has a lobe about as big as the end of the thumb. This lobe is made up of some 1,900 "telephone exchanges," called glomeruli, and each of these sends 24 neurons to the brain. These neuron bundles are compared by the physicist to a board with 24 lights. By turning on some of the lights, a recognizable picture can be formed.

Similarly, when an odor is detected, their theory suggests that particular ones of these 24 neurons "light up" to form a code for chloroform, for instance, and nothing else. With only 24 neurons, it is possible to get some 16,000,000 patterns, corresponding to as many different odors.

Although the kind of odor depends on the pattern, the strength of the odor depends on how many of the 1,900 bundles of 24 neurons react to the chloroform, and that is dependent on how much chloroform is in the air.

By their theory, the physicists have shown that there should be about 30 levels of intensity, which agrees with experimental evidence for trained people.

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MARINE BIOLOGY

Tuna Breeding Stock

➤ A CATCH of 92 tuna averaging about five times the size of ordinary commercially caught tuna off the Pacific Coast, demonstrates the presence of deep-swimming breeding stock in the eastern Pacific. The catch has been reported by Dr. Milner B. Schaefer, director of the Inter-American Tropical Tuna Commission.

The big fish were brought to San Diego on the research ship N. B. Scofield, back from a two-month expedition to tropical waters to find whether these large yellow fin and big eye tuna inhabited that region. The expedition was the joint effort of the commission, the Scripps Institution of Oceanography and the California Division of Fish and Game.

Dr. Bell Shimada, fisheries scientist on the expedition for the commission, reported the catch averaged 200 pounds per fish. Big eye tuna ranged up to 350 pounds and yellow fin up to 250 pounds.

The fish were caught by the "long line" method used by Japanese and Hawaiian fishermen. In this method lines are left supported by buoys which trail dead bait 100 feet beneath the surface of the ocean. Although this system of fishing is standard among oriental fishermen, it has never been used on this side of the Pacific because of its high cost in labor. California tuna fishermen pole-fish on the ocean surface.

Most of the tuna were caught on a southerly course which terminated about 250 miles southwest of the Galapagos Islands, productive fishing area for West Coast commercial fishermen. Dr. Shimada pointed out that few of the big fish were caught over the fishing banks or closer to either the Central American or South American shore lines.

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INVENTION

Patent Given to Circular-Winged Plane

➤ AN AIRPLANE with round wings resembling flapjacks has been invented by Stanley Rzepela of Philadelphia, Pa. The plane is powered by two propellers situated vertically inside the hollow wings. Both propellers are belt-driven through a system of pulleys from a single engine.

The airplane is designed to combine the properties of a helicopter and a jet plane. Air is sucked into the wings through a large hole in the top of each wing. It is discharged toward the ground through a similar hole in the bottom of each wing. When the propellers are going fast enough, the airplane is supposed to rise straight up.

Then the bottom holes in the wings are closed. This causes the air to be channeled through a tube in the fuselage and to be discharged in jet-fashion near the tail.

Mr. Rzepela states that this jet action propels the plane forward in flight. He received patent No. 2,635,833.

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PHYSIOLOGY

Appetite Center in Brain

Spot food intake center in brain's hypothalamus. Damage of this organ at one point increases appetite tremendously, while injury at nearby point cuts off food intake.

➤ A PLACE in the brain that controls how much you want to eat has been discovered. Its location and action were announced by Dr. C. N. H. Long of Yale University at the meeting of the American Philosophical Society in Philadelphia.

This appetite center, or food intake control center, is located at the base of the brain in a structure called the hypothalamus.

Damage or destruction of one part of this appetite center may cause such a voracious appetite that an animal will eat twice or three times the normal amount of food. This soon leads to such a marked degree of obesity that the body may ultimately contain 70% of fat.

Damage slightly to the side of the voracious appetite spot causes an abrupt and permanent stop to all food intake. An animal with damage in this location will starve itself to death in the presence of an abundant food supply. Animals voracious because of damage to the first, more central spot also stop eating when the spot on the side is destroyed.

"It would appear," Dr. Long stated in reporting these discoveries by himself and his associates, "that there exist in the hypothalamus two areas, in close proximity to each other, which exert opposite effects on food intake." One may be regarded as inhibiting, the other as stimulating the body mechanisms that "ultimately convey the sensations of hunger or satiety to the realm of consciousness."

"There is little doubt," Dr. Long said, "that the activity of these primitive regulatory mechanisms may be modified by impulses reaching them from other areas of the brain and that this accounts for the marked effect of the sight, smell and taste of food upon appetite. Furthermore, dietary habits and social customs can and do produce alterations in food intake which may be contrary to the well being of the organism.

"The fact that certain hypothalamic lesions cause voracity and ultimate obesity may be used to produce experimental animals in which the consequences of this condition may be compared to those occurring in obese humans.

"It has been found, as in the case in man, that such obesity not only shortens the life of the animals but is associated with the appearance of diabetes, cardio-vascular renal disease; conditions which are of infrequent occurrence in normal animals.

"Since, in this country, obesity has become one of the major contributing factors to the increased evidence of these so-called degenerative diseases, its experimental production in animals affords an opportunity for further study of the reasons why excessive food intake ultimately leads to the premature failure of the essential organs of existence."

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CHEMISTRY

Better Reactor Materials By Quick Freeze Studies

➤ BETTER MATERIALS for use in nuclear reactors for atomic power production are expected from studies of the quick freezing of ceramics at the Argonne National Laboratory, Lemont, Ill.

George B. Eyerly and Wingate A. Lambertson have developed a new kind of high-temperature furnace. In it, they can heat ceramic materials to 5,000 degrees Fahrenheit, then suddenly quench the materials by plunging them to 320 degrees below zero.

Changes in the structure of the ceramic materials that occur because of the high temperature are "frozen" for future study at room temperature by the quenching operation. Such studies aid in developing construction materials for nuclear reactors in the high temperature ranges. Speed of quenching in the 18-inch-high furnace has been found by high speed photography to be less than one second.

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ENTOMOLOGY

Bed Sheet Is Signal For Traffic of Midges

➤ WHITE-SHEETED GHOSTS should not be troubled much with mosquitoes in Alaska—even if they did have blood to suck. Observations on the mosquito, *Aedes punctor,* in southeastern Alaska show that their great swarms are broken up when a white bed sheet is placed under them, Dr. W. C. Frohne, U. S. Public Health Service entomologist, reports in the *Mosquito News* (March).

The swarming midge, *Anatopynia algens,* on the other hand, is attracted to a light-colored surface, he said. When a white sheet was spread out near the midges, they gathered over it. When the sheet was picked up and moved along a 50-foot walk, the swarm of tiny midges followed it.

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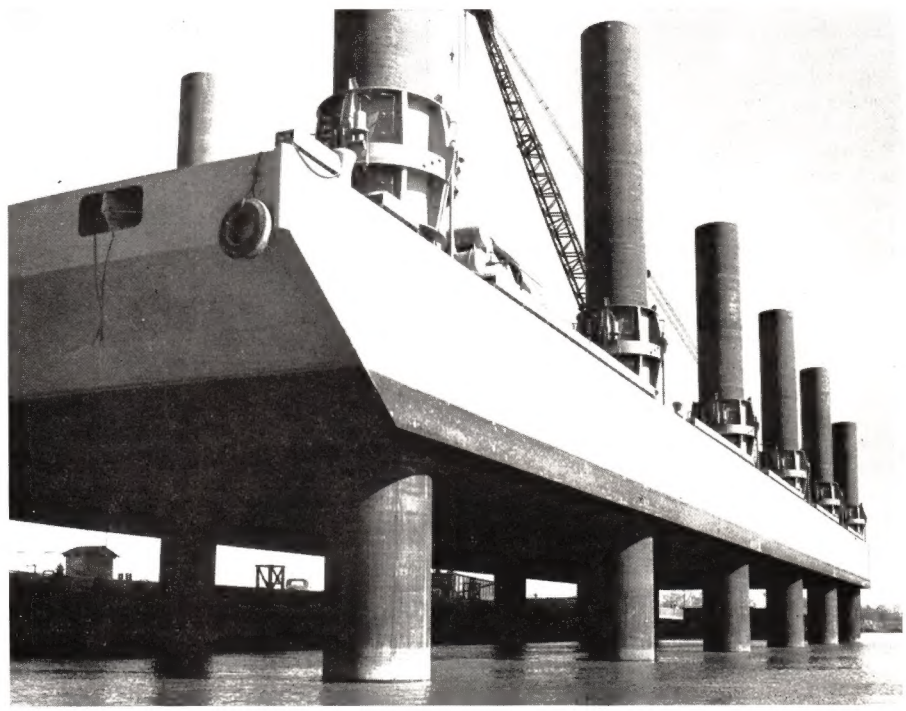

DOCK-BARGE COMBINATION—This new type of steel dock, built as a barge, can be floated to its destination, then installed permanently on its jack-driven legs. The jack mechanism works on the same principle used to shinny up a tree. The Army has ordered six larger models of the version shown here.

GENERAL SCIENCE

FDA Work Threatened

Worst threat in 30 years faces Food and Drug Administration officials in their efforts to stop contamination of wheat for baked products. Settlement of affair is at Cabinet level.

➤ UNDER THE new administration the scientific government agency that protects us from dirty, adulterated food and dangerous drugs and cosmetics, is facing the worst threat to its work in 30 years.

The threat comes through efforts to stop the Food and Drug Administration from setting and enforcing standards of cleanliness for wheat so that our bread and cakes will not have insects and rodent filth in them.

The principles involved go through all the work of the FDA.

Back in 1949, FDA started an educational campaign, trying to get farmers and grain elevator operators to handle wheat like food instead of "like crushed rock or sand." Bakers and millers had already done their end of the clean-up job but bits of ground-up insects and rodent hairs were still appearing in bread that was baked in clean bakeries from flour milled in clean mills. The insect and rodent bits could only be detected under the microscope, but FDA did not think Americans wanted to eat that kind of bread.

After more than three years of the educational campaign, FDA started, last September, to seize and condemn carloads of wheat if as much as one pellet of rodent excreta was found in a pint of wheat scattered through the car. That amount means the whole carload has been liberally doused with rodent excreta. And no milling machine made will take it out as the wheat is ground into flour. It must be kept out of the wheat before it reaches the mill.

FDA also wanted to condemn wheat with "bugs" in it. If there were as many as 15 bugs in a handful of wheat, it was not fit for human consumption in FDA's opinion. The "bugs" are very small but they leave holes in the wheat kernels which can be seen. All the farmer, or grain elevator operator, needs to do is pick up a handful of wheat kernels. If he finds holes in three kernels, he can be sure there are 15 insect-infested kernels in every handful.

But FDA has been forced to abandon part of this program to insure clean wheat for our bread, spaghetti, cakes and the like.

Pressure came from the grain trade (not the millers—they want clean wheat because they can get more flour from it than from wheat badly hollowed out by insects) and from the Department of Agriculture's Commodity Credit Corporation. The latter will have some two billion dollars worth of wheat this year and does not want to have part of it condemned as unfit for human consumption.

FDA refused to back down completely. It arranged an agreement with Agriculture whereby, for this year, wheat with two percent or more visible insect damage and 20 or more "bugs" per quart would be declared contraband. FDA hopes to keep the pressure on farmers and grain handlers at least a little and to move forward toward clean wheat in the future.

The affair is now at the Cabinet level for decision, following a letter from Secretary of Agriculture Benson to the new Secretary of the new Department of Health, Education and Welfare, Mrs. Oveta Culp Hobby. So far, Mrs. Hobby has shown no signs of weakening in her support of her FDA.

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RADIOLOGY

Liver Cancer Relief By Massive X-ray Doses

➤ PATIENTS WITH widespread cancer which has involved the liver can now be given relief of symptons, sometimes for as long as seven months, by large doses of X-rays directly to the liver, four doctors reported to the American Radium Society meeting in St. Louis.

The doctors are Ralph Phillips, David A. Karnofsky, Leonard D. Hamilton and J. J. Nickson of Memorial Center for Cancer and Allied Diseases, New York.

Heretofore doctors have thought that cancers which had spread to the liver were "hopeless" because normal liver tissue was believed as sensitive to X-rays as cancer tissue. X-ray treatment, it was therefore believed, would destroy liver function.

But liver function tests, performed for the first time on patients who had X-ray treatment of the liver, showed that the normal liver tissue was not harmed and continued to function.

The X-ray doses used by the Memorial doctors ranged from 2,000 to 3,750 roentgens, delivered by one-million-volt radiation equipment. At even the highest X-ray dose, there was no sign of damage to normal liver tissue.

The treatment was given to 36 patients with cancer of the breast, lung, esophagus, stomach, colon or rectum which had spread to the liver. Of the 36 patients, 28 were relieved of symptoms such as pain, abdominal distention, nausea and vomiting, weakness and fever, and loss of appetite. In some cases livers which were abnormally large before treatment were reduced in size.

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• RADIO

Saturday, May 9, 1953, 3:15-3:30 p.m. EDT

"Adventures in Science" with Watson Davis, director of Science Service, over the CBS Radio Network. Check your local CBS station.

Dr. John R. Dunning, dean of engineering at Columbia University, New York City, will discuss "National Science Fair" in progress at Oak Ridge, Tenn.

GENERAL SCIENCE

Literature Limitation Placed on Astin's Bureau

➤ NO CIRCULARS, bulletins or handbooks can be published by scientists at the National Bureau of Standards without an OK from the Commerce Department.

The order, now revealed for the first time, applies to National Bureau of Standards "Circulars, Handbooks, Applied Mathematics Series, Building Materials and Structures Reports, and Miscellaneous Publications."

These publications previously had a blanket approval, but that was withdrawn on Feb. 18 as a "purely routine" procedure, according to the director of the office of publications management in the Commerce Department, Donald R. Burgess.

One such circular, Number 504, covers Battery Additives. It has been withdrawn from circulation by order of Secretary of Commerce Weeks, who fired Dr. A. V. Astin as director of the National Bureau of Standards, stating that the bureau was not sufficiently "objective" in its analysis of the battery additive AD-X2.

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GENERAL SCIENCE

Defense Halts New Standards Research

➤ SECRETARY OF Defense Charles E. Wilson has ordered the military not to place any further contracts for scientific research at the National Bureau of Standards or other government agencies without clearance from him.

This action followed a request from Secretary of Commerce Sinclair Weeks, who noted that about 80% of the bureau's work is on defense projects. The order would seem to be part of a long-range program to take all possible research and development functions out of government's hands and put them into those of private industry.

Yearly budget of the Bureau of Standards from Congress is only about $10,000,000. About $40,000,000 comes from other government agencies, such as the Defense Department and the Atomic Energy Commission, for specific research projects.

The Defense Department shells out a major part of the $40,000,000 for bureau work on such projects as proximity fuses, guided missiles and atomic energy.

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GENERAL SCIENCE

Wildlife Chief Dismissed

Scientists protest ouster of Albert M. Day, with 35 years of service, as bureau chief. Administration states reason for change is to put men of their own choice in policy positions.

➤ THE NATION'S scientists, already boiling mad following the battery additive incident in which Dr. A. V. Astin, head of the Bureau of Standards, was summarily fired, then reinstated temporarily, turned red hot at the dismissal of Albert M. Day, head of the U. S. Fish and Wildlife Service.

Mr. Day, with nearly 35 years of service as a government scientist to his credit, lost his job for strictly political reasons. Secretary of Interior Douglas McKay, Mr. Day's boss, "wants to put men of his own choice through all the top policy-making positions in the department," a spokesman explained.

After several tension-filled days, Secretary McKay finally announced that Day could stay on as an assistant director.

Secretary McKay's choice for chief is John L. Farley of Seattle, Wash., a public relations man with the Crown Zellerbach Corporation, a huge paper-manufacturing concern.

The man who is to head one of the government's largest biological research agencies has a B.S. degree in electrical engineering. After army service in the first World War, Mr. Farley worked for nearly six years with the Pacific Gas and Electric Company in California as a sales engineer and public relations officer.

From 1929 to 1935 he was executive officer of the California Division of Fish and Game. Isadore Zellerbach, of the Crown Zellerbach Corporation, was president of the division through 1931, and was a commissioner at least through 1935.

According to California Fish and Game bulletins issued during these years, these jobs were filled by appointment by the governor.

Mr. Farley's job with Crown Zellerbach was interrupted by the second World War, during which time he served in the artillery, becoming a colonel. He was discharged from active duty in 1945, and resumed his old job in "community relations work" with the paper-manufacturing concern.

A high-ranking scientist in the Fish and Wildlife Service told SCIENCE SERVICE that morale in the service was at a low ebb. "We all admire Mr. Day," he said, "as a scientist and as a man. It is especially hard on us to see him replaced by a man who doesn't have the scientific background and training so necessary in our work."

Fred M. Packard, executive secretary of the National Parks Association, said while Secretary McKay certainly has the right to reorganize his department, he should have made the appointment from within the Fish and Wildlife ranks, or at least selected a scientist who understands the problems and philosophy of the Fish and Wildlife Service.

Within the Fish and Wildlife Service, the men who have made conservation and wildlife research their life work feel the bite of insecurity. "We must have government jobs," one of them explained, "either Federal or state, because they are about the only agencies that can make use of our specialized training.

"But if politics enters the service, and non-scientists get the jobs, well, we must feel pretty shaky."

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GENERAL SCIENCE

32 Groups Protest Firing of Day to Ike

➤ PRESIDENT EISENHOWER was scheduled to hear the complaints of 32 conservation and scientific groups over the entrance of politics into the hiring and firing of personnel in the government's conservation agencies at a meeting with the Emergency Committee on Natural Resources delegation April 28.

C. R. Gutermuth, secretary of the committee of representatives from the 32 organizations, told SCIENCE SERVICE the political firing of Albert M. Day as head of the Fish and Wildlife Service, would rank high among the matters discussed.

A man with nearly 35 years of service as a government scientist, Mr. Day was fired as head of the service by Secretary of Interior McKay, to be replaced by John L. Farley of Seattle, a public relations officer with a large paper manufacturing business.

In a letter dated Jan. 27, sent to the President, the Emergency Committee on Natural Resources asked the President to keep the Fish and Wildlife Service and similar agencies free from politics.

"We believe that such agencies . . . should be administered and operated by professionally trained individuals selected under the Civil Service System," the letter said, "and not subject to replacement for political reasons." Mr. Day was under Civil Service. In another letter, sent to Secretary of Interior McKay dated Feb. 19, the Committee commended the wildlife protection policies of the bureau under Mr. Day.

"A major responsibility of the Secretary of Interior," the letter said, "is the maintenance of the migratory waterfowl resource to which this country is pledged by treaties with both Canada and Mexico. There are many pressures for special favors by various groups who seek to exploit for their own personal enjoyment or profit this continental resource.

"We believe that the Fish and Wildlife Service has done a good job in guarding this resource, and in placing the interests of the resource above that of any group which seeks its exploitation."

Mr. Day has accused pressure groups against his wildlife protection policies as being instrumental in his dismissal.

Member organizations of the Emergency Committee on Natural Resources are: American Fisheries Society, American Federation of State, County, and Municipal Employees, A.F.L., American Geographical Society, American Nature Association, American Planning and Civic Association, American Society of Zoologists, Better Fishing, Inc., Congress of Industrial Organizations, Conservation Foundation, Cooperative League of the U.S.A., International Association of Game, Fish and Conservation Commissioners, Grassland Research Foundation, Izaak Walton League of America, National Association of Soil Conservation Districts, National Audubon Society, National Farms Union, National Parks Association, National Wildlife Federation, New York Zoological Society, North American Wildlife Foundation, Outdoor Writers Association of America, Public Affairs Institute, Pulp Sulphite and Paper Mill Workers, A.F.L., Sierra Club, Society of American Foresters, Soil Conservation Society of America, Sport Fishing Institute, The Mountaineers, Wilderness Society, Wild Flower Preservation Society, Wildlife Management Institute and Wildlife Society.

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TECHNOLOGY

Twisting Cotton Fibers Help Spot Fake Fabric

➤ THE TWISTING and curling of slightly damp cotton fibers as they dry, such as visible with a good magnifying glass in a drying shirt or blouse, helped spot a fake Tiraz fabric, Rene Batigne and Miss Louisa Bellinger told the American Philosophical Society meeting in Philadelphia.

This constant shifting of drying cotton fibers enabled Mr. Batigne and Miss Bellinger to spot a Dated Tiraz Fabric as a fake, made in Asia in 941 or 942 A.D., not in Egypt. Tiraz fabrics record historical texts in embroidery. But to judge if the text is correct, historians must know that the Dated Tiraz is genuine.

By dampening the fibers slightly, they can tell. Drying cotton fibers have the liveliest "dance," while linen curls and twists much less, although both cotton and linen make a fabric that looks the same. Since cotton is the prevalent fiber in Asia, while linen prevails in Egypt, the fake fabric was spotted.

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MEDICINE

Eat, Drink, Be Merry Without Any Stomach

➤ SOME PEOPLE without any stomachs at all can eat, drink and be merry and some cannot. Physicians at the University of California Medical School are trying to find out what this difference is. In some cancer patients the entire stomach has to be removed.

Some of these patients, Dr. H. J. McCorkle said, develop nutritional deficiencies because they are unable to digest the food with what they have left in their abdomens. The scientists are, therefore, making precise studies in animals of the best methods of connecting the esophagus, leading to the stomach, with the intestines.

Uusally surgeons bypass the duodenum, section of small intestine directly below the stomach, Dr. McCorkle said. However, at the University of California they believe the duodenum can be useful in helping to digest the food. Therefore in many cases, the esophagus is connected directly with the duodenum. In some of these cases the stomach is hardly missed at all.

When it is missed, that is, when nutritional difficulties develop, special foods are sometimes given. These contain concentrations of amino acids, carbohydrates, vitamins and other supplements. The only trouble is the mixture tastes horrible, so the scientists are trying to find a way to make it taste good.

Science News Letter, May 2, 1953

INVENTION

Location Indicator Spots Position on Map

➤ VACATIONING MOTORISTS some day may profit by two auto accessories recently patented. One device tells the motorist exactly where he is, pointing out his position on a ribbon map. The other device clicks a warning when tires are underinflated.

The location indicator is designed to be attached to the car's steering post. It is mechanically driven like a speedometer by a cable running to a wheel of the car. As the wheel turns, the narrow ribbon map is pulled past a small window. Moving in proportion to the speed of the car, the map indicates the momentary geographic position of the car, states inventor Forrest S. Field of Pittsburgh, Pa.

Maps for the indicator can be printed on paper, plastic or other material that does not conduct electricity. Holes can be punched in the ribbon near points of danger or points of interest. When the car approaches one of these points, a light flashes and a buzzer sounds to attract the driver's attention. Ordinary paper staples that conduct electricity can be used to make the warning circuits work. In that case, the staples replace holes punched in the tape.

Mr. Field received patent No. 2,635,372 for his invention.

Richard R. Schmitt of Kansas City, Mo., invented the clicker that warns motorists of under-inflated tires. The little metal device clamps to the car's wheel, touching the tire. If the tire is under-inflated, it bulges under the weight of the car each time the wheel goes around. This bulging action causes the tire pressure indicator to click. The device is protected by patent No. 2,635,577.

Science News Letter, May 2, 1953

PUBLIC HEALTH

Find Multiple Sclerosis More Common in North

➤ MORE PEOPLE have multiple sclerosis and there are more deaths from the disease in Canada and the northern states than in the south, Dr. Leonard T. Kurland of the U. S. National Institutes of Health, Bethesda, Md., and Dr. Knut B. Westlund of the Johns Hopkins School of Hygiene and Public Health, Baltimore, reported at a conference in New York held by the New York Academy of Sciences and the National Multiple Sclerosis Society.

Although Boston, Winnipeg and Denver had more cases per thousand of population than New Orleans, the life expectancy for the patients was about the same in the different cities. The average life expectancy is 20 to 25 years.

In Winnipeg, multiple sclerosis patients did not differ from the population in general in national origin, place of birth, diet, economic status, education, or in having had head injuries, infections, inoculations or something similar just before the disease started.

These and other findings make up the final report on a study sponsored by the National Multiple Sclerosis Society and the Public Health Service to learn whether climate, national origin, diet, and so on could give any clues to the cause of the disease.

Science News Letter, May 2, 1953

MEDICINE

Aspirin Ups Cortisone To Stop Rheumatic Fever

➤ THE REASON aspirin helps stop an attack of acute rheumatic fever may be that it stimulates the adrenal glands to produce more of their anti-rheumatism hormone, cortisone.

"Indirect evidence" for this was reported by Drs. Vincent C. Kelley, Alan K. Done and Robert S. Ely of Salt Lake City at the meeting of the American Heart Association in Atlantic City, N. J.

Aspirin has long been the established medicine for the heart-crippling disease, rheumatic fever. Lately doctors have been giving cortisone and the other famous anti-arthritis remedy, ACTH.

Science News Letter, May 2, 1953

IN SCIEN

AERONAUTICS

New Work Plane Uses Short Runways

➤ A NEW high-flying, more economical work plane has been created at Lockheed Aircraft Corporation. It will give the Air Force a long-range personnel and cargo carrier that can take off and land on "short" runways.

Powered by four turbo-prop engines, the plane is designed to fly assault and ground-support missions. Performance details of the C-130, as it is called, are secret, but it is said to "fly faster and higher" than any current military transport.

Prototypes now are being built at Lockheed's factory at Burbank, Calif.

Science News Letter, May 2, 1953

MEDICINE

Sex Habits Probed For Relation to Cancer

➤ THE SEX habits of 1,000 women are being investigated in Los Angeles in the interests of cancer research.

Five hundred women with cancer of the cervix, one of the two leading types of cancer in women, and 500 cancer-free women are being asked about their sexual partners, the frequency of sexual intercourse and their sex hygiene habits in an effort to determine the part these things play in cervical cancer.

The Kinsey-like survey is being carried out among patients at Los Angeles County Hospital by Drs. Edward G. Jones and Ian Macdonald.

So far, about 300 women have been interviewed, half with cancer, half without. Answers so far suggest that early marriage and bearing children before the age of 20 are more common among women with cervical cancer than women without the disease. Their findings also confirm other studies showing that low economic status, divorce, separation from husbands and widowhood seem to have some relationship to the disease.

One big factor in cervical cancer seems to be pregnancy. Therefore the physicians are undertaking to ask questions about everything connected with having a baby to try to show whether there is a cause-effect relationship from any one of these factors to cancer of the cervix.

Previous studies have shown, for instance, that Jewish women suffer less cancer of the cervix and that Jewish men suffer less prostate cancer. It is speculated that this might be because of the almost universal practice of circumcising Jewish male babies.

Science News Letter, May 2, 1953

CE FIELDS

BIOCHEMISTRY

Pituitary Hormone May Help Treat Anemia

➤ A HORMONE that may one day be a help in treating anemia and that is manufactured by man's pituitary gland has been isolated for the first time by a team of scientists at the University of California.

The substance, which was extracted from the anterior lobes of the sheep's pituitary, has been used on rats whose rate of formation of red blood cells had been cut 45%. This cut was produced by taking out the animal's pituitary. After an extremely tiny dose of the new substance, called erythropoietic hormone, the rate of production of red blood cells went up and the anemic condition disappeared.

Most of the decrease in red blood cells in an anemic person is because the cells die or are destroyed before their normal life span of 120 days. In addition the rates of formation of new cells by the bone marrow goes down. While the newly discovered hormone cannot prolong the life of blood cells, it can increase the rate of production, according to the scientists.

The hormone has not yet been tested on man but if it works in helping to control human anemia, small doses would probably have to be given daily.

Scientists who worked on the problem include Drs. N. I. Berlin, Donald Van Dyke, Rex Huff, Alex Contopoulos, John H. Lawrence and Herbert Evans.

Science News Letter, May 2, 1953

MEDICINE

Five-Drug Mixture Treats Nasal Misery

➤ A FIVE-DRUG mixture for treating nose and sinus infections has given results that "seem very promising" in the hands of Drs. Sidney N. Busis and Louis L. Friedman of the University of Pittsburgh and Montefiore Hospital.

This new promise of relief of nasal misery is made of: 1. phenylephrine hydrochloride, a blood vessel constrictor and nasal decongester, better known under its trade name of Neosynephrine; 2. thonzylamine hydrochloride, an antihistamine trade named Neohetramine hydrochloride, put in to help the decongesting effect of phenylephrine; 3. and 4. neomycin and gramicidin, two antibiotics or so-called mold remedies which are active against a wide range of bacteria; and 5. thonzonium bromide, a synthetic wetting agent put in to help the drug penetrate evenly over all the infected surface and through the mucus in addition to doing some germ-killing.

The Pittsburgh doctors tried this combination in 95 patients, though only 65 came back after the first treatment. The drug was used as a nasal pack at the first visit and after the packing, the nose was carefully suctioned. Patients then were told to use the medicine at home as a spray three times a day.

Patients said they got prompt relief of congestion and the doctors' examination at subsequent visits showed improved condition.

Bacteriological examination of 18 patients showed the new drug to have a "remarkably effective and prolonged action" in promptly killing bacteria.

The new drug, reported in *Antibiotics and Chemotherapy,* is called Biomydrin by its manufacturer, Nepera Chemical Company of Yonkers, N. Y. It is available only on doctor's prescription.

Science News Letter, May 2, 1953

MEDICINE

Jumping Wild Mice Caught for Cancer Study

➤ MICE SO wild they can jump clear out of an ordinary garbage can, starting from its bottom, are being brought into the laboratory to see whether they differ from the laboratory animals in the kinds of cancer they have.

They are caught by University of California students on the salt flats of San Francisco Bay. So far, 50 of them have been caught and they are a real problem to handle, according to Dr. Kenneth B. Deome, director of the Cancer Research Genetics Laboratory at the school.

Special problems developed in handling them because they were so wild. Tough cages had to be built and particular precautions had to be taken against their sharp teeth. "They bit us all the time," Dr. Deome said. Laboratory mice are as gentle as pets.

The wild mice are being studied to see whether nature has given mice protection against certain kinds of cancer or whether that protection is the result of breeding in the laboratory mice. Dr. Deome has to wait a few generations yet to find his answer.

Science News Letter, May 2, 1953

TECHNOLOGY

Three Do Work of Four With Titanium Mortar

➤ THE NEW wonder titanium metal allows three men to do the work of four in putting the Army's 81 mm. mortar into action.

A lightweight base plate for the mortar made of titanium, half the weight of the old iron plate, was revealed by Paul Zinner of the U. S. Bureau of Mines in hearings before the House Appropriations Subcommittee.

Science News Letter, May 2, 1953

GENETICS

Gene Companion Causes Seeming Cancer Heritage

➤ A NAUGHTY companion rather than any change in the character of the gene itself may cause apparent inheritance of cancer.

No one has ever been able to say definitely that cancer in human beings is inherited, although the way it sometimes runs in families is suspicious. Now studies done on fruit flies at the University of California at Los Angeles make it appear that an influenced rather than a changed or mutated gene might be the cause of this.

Dr. Taylor Hinton, geneticist, said that he has induced by X-rays a flip-flop in position of a chromosome part called heterochromatin. This seems to influence a gene —genes are responsible for the inheritance of all physical characteristics—so that the fruit flies can carry a tumor from generation to generation. In addition, the X-ray flip-flop of the chromosome started the tumor in the first place.

The change caused by the X-ray also seems to make the fruit fly lose its ability to produce nucleic acids, basic living matter without which no creature can live. A high concentration of nucleic acids added to the diet takes care of that. Dr. Hinton suspects, but has no proof as yet, that the two effects are related.

Science News Letter, May 2, 1953

MEDICINE

Could Save Twice as Many Cancer Patients

➤ ABOUT 140,000 cancer patients could have been saved from death in 1952 instead of the approximately 70,000 that were saved, officials of the American Cancer Society have declared in New York.

Their statement came with the annual report of the society on the eve of the "educational fund-raising crusade in April, designated by presidential proclamation and congressional resolution as Cancer Control Month."

The additional 70,000 lives could have been saved, the society states, if every cancer case had been treated early and by the most effective methods.

To show still further the many "unnecessary" deaths from cancer today, the society gives the following figures for present and possible cure rates in cancer in six common sites:

At present cancer of the female generative sites is cured in 30% of the cases, could be cured in 80%; cancer of the lung now cured in five percent of cases, could be 50%; breast cancer now cured in 35%, could be cured in 70% of cases; cancer of rectum now cured in 15%, could be cured in 75% of cases; cancer of the mouth now cured in 40%, could be cured in 65% of cases; skin cancer now cured in 85%, could be cured in 95% of cases.

Science News Letter, May 2, 1953

INVENTION

Inventions Wanted

National Inventors Council asks public to put on its thinking cap, dream up ideas for defense. About 25,000 ideas and inventions a year already come into Council headquarters.

By WADSWORTH LIKELY

➤ KNOW HOW to transport an Army over the Arctic snows without leaving any telltale tracks? Got any ideas on how to transmit messages without using sound waves, light waves, radio waves, or even wires? Can you think of a way to make dry cream which will last for six months at temperatures up to 100 degrees Fahrenheit?

If you can, the National Inventors Council is looking for you.

The National Inventors Council is an organization set up in 1940 to receive and funnel ideas for inventions that would help the military in its tasks. It also has the job of publicizing the needs of the Armed Forces for certain things with the hope that some inventor will come up with the right idea.

Its chairman is Dr. Charles F. Kettering, automotive inventor and research consultant to General Motors. Its secretary is Lawrence Langner, noted theatrical producer and patent attorney. Its members include well-known inventors and industrialists and the U. S. Commissioner of Patents.

This body of eminent citizens, together with a staff set up in the Commerce Department's Office of Technical Services, sifts through about 25,000 ideas or inventions a year. The staff throws out about 95% of these as already invented, impracticable, or, in some cases, plain crackpot. About two out of five of the remaining five percent are sent to various council members for more checking. Finally only about 750 ideas or inventions a year are turned over to the branches of the Armed Forces which have or might have need of them.

Requirements Are Listed

Most of the usable ideas come through publication of lists entitled "Technical Problems Affecting National Defense." Latest of these lists has recently been published. It is distributed to scientific and technical journals and to a mailing list of established free lance inventors.

Perhaps the most valuable invention turned up through the National Inventors Council was the land mine detector which became famous during World War II. It saved countless lives and enabled troops to clear and go through mine fields in record time.

The land mine detector had already been invented, but it was not then called a land mine detector. It was developed before the war for the purpose of looking for buried treasure. Publication of the need for a land mine detector brought the owner of the buried treasure hunter and the Armed Forces together. It worked as well for mines as it did for buried treasure.

On the other hand, lots of needs stay on the list for years, lots of ideas come in, but none of them are satisfactory. Many would-be inventors have had ideas, for instance, about covering tracks in the snow. Most of them involve a vehicle which scrapes up the snow in the tracks and sprays it down again. So far, this hasn't worked.

The invention of body armor made of nylon was not the result of the work of the National Inventors Council. But since then, through the Council, several new combinations of nylon fabric have been brought to light. Some of these are good enough to submit to the Army for testing. They might well be improvements on the body armor now in use in Korea.

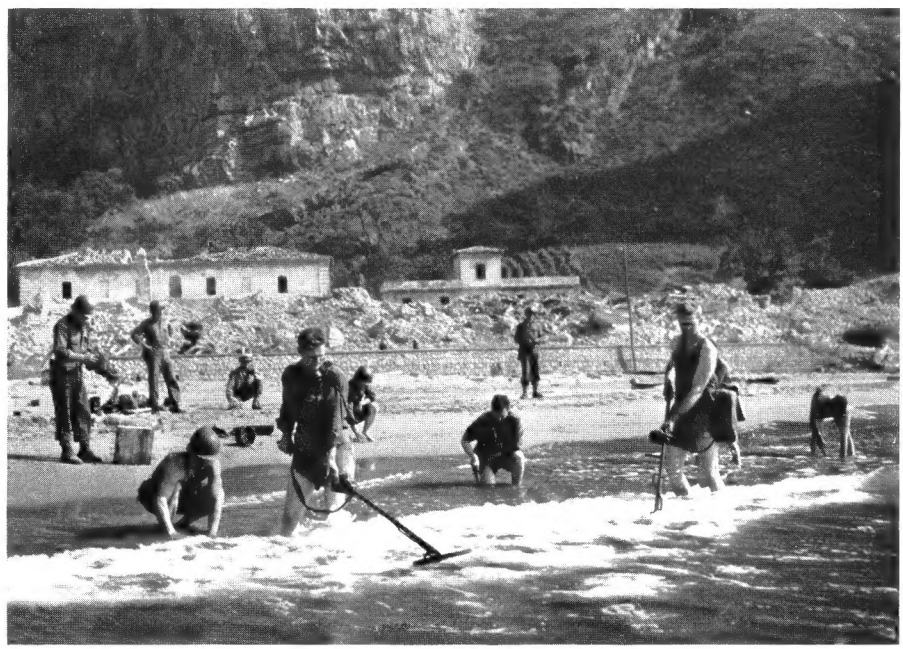
The Council has on its latest list the need for some kind of clothing that will protect the individual soldier against flame. This would be a boon in these days of flame throwers and napalm bombs. Such protection, however, must not materially increase the weight load nor the wearability from the standpoint of comfort of the uniform, the Council says. This rules out the bulky covering used by emergency fire fighters.

Sometimes the Council is successful in filling the Army's needs, only to find that the troops cannot be persuaded to use the invention. For instance, the Council publicized the need for a contraption which would utilize the heat from a soldier's breath in keeping his body warm.

Ideas Submitted Twice

Somebody invented a mask which fitted over the nose and mouth and which had connections to other parts of the body for distributing the heat produced by the breath. It worked well in tests—75% of the heat from the breath was distributed. But, in the field, soldiers refused to wear the constricting masks.

And once in a while the Army gets through the National Inventors Council an invention it has previously turned down. During World War II, the Army told the Council it was looking for a draft gauge



MINE DETECTOR—Discovered as a result of publication of the information by the National Inventors Council during World War II that a land mine detector was needed, the instrument had originally been developed for discovering buried treasure. This simple gadget, shown being used during the war, saved thousands of soldiers' lives and permitted rapid advances over mine fields.

for marine vessels. The Council listed this need. The American Hydromath Corp., considerably surprised, told the Council it had just the thing. In fact, it had been trying to sell its gauge to the Army for some time, but the Army turned the corporation down. Sure enough, the Council found out, this gauge was just what the Army needed.

For the first time, foods and food products are now being listed by the Council. Previously the Quartermaster Corps developed its own products. Now the Council is letting inventors know that the Armed Forces requires 100 canned meat items, distinctly different in flavor, texture and appearance characteristics. These must have a storage life of one year at 100 degrees Fahrenheit. Approximately 35 of these 100 are now available.

Also needed are canned seafood items, dehydrated precooked meat products and an all-purpose survival ration bar as well as the dry cream previously mentioned.

Among other technical requirements publicized by the National Inventors Council are insulating materials for various special purposes, improved load-carrying systems for individual soldiers assigned to special functions, waterproof clothing, a gelling agent for gasoline, a method of rapidly splicing field wire, an extra-light snow vehicle, a substitute for down and feathers in sleeping bags, and a personal heating system that does not involve an uncomfortable face mask.

Science News Letter, May 2, 1953

TECHNOLOGY

Easy-to-Build Gauge Tells Farmers of Winds

➤ AN INEXPENSIVE, easy-to-build wind gauge for use in agricultural spraying has been developed by two members of Texas A. and M. College, College Station.

Compact, rugged and simple in design, the gauge can be constructed in a farm or ranch shop with materials available from a local tinsmith.

Essentially the gauge consists of a swinging indicator suspended from a pin. The indicator is blown through an arc depending upon the force of the wind. A pointer on the indicator moves over a scale, graduated from zero to 10 miles an hour, from which the wind velocity is read. If the wind is blowing faster than 10 miles an hour, spraying should not be done—particularly from airplanes.

Wayne G. McCully, assistant professor in the department of range and forestry, and H. F. Miller, formerly of the department of agricultural engineering but now an agricultural engineer at the University of California, developed the gauge.

Their description, along with detailed drawings and graduated scales for different gauges and types of metals, has been published as Progress Report 1466 of the Texas Agricultural Experiment Station.

Science News Letter, May 2, 1953

ELECTRONICS

Synchronize 3-D Movies

➤ A LITTLE electronic gadget about the size of a football has been adapted to keep three-dimension movie projectors in step with each other.

Called selsyns, the devices produce an electrical coupling between the two projectors needed to show Natural Vision third-dimension movies. They do not have some of the disadvantages of the mechanical system formerly used.

The trick of showing 3-D movies such as "Bwana Devil" lies in keeping the two projectors in exact synchronization. That type of third-dimensional picture requires two films to be shown at once on a flat screen. The films are viewed through polaroid glasses so that each eye gets a slightly different picture to produce the illusion of depth.

If one projector gets ahead of the other, the screened picture gets out of step with itself and the third-dimensional effect goes haywire. To prevent that from happening, a mechanical coupling between the projectors has been used. But now the little selsyns, which are about the size of a football, can do the same job. And they can do it better.

If a 3-D short subject were included in a program of standard films, the mechanical coupling had to be connected and disconnected three to seven times a day. The spinning bar also consumed valuable space and made it difficult for the operator to thread his machines.

The selsyns connect and disconnect at the flick of a switch. They are attached to the projector in such a way as to require little space.

MEDICINE

Diagnose Heart Disease By TV in the Future

➤ DIAGNOSIS OF heart disease by TV is promised for the future by Westinghouse Electric Corporation and cooperating physicians at the University of Maryland School of Medicine.

A "revolutionary new X-ray unit," developed by Westinghouse, will make possible the televising of the heart and other internal organs as they would appear on the fluoroscope to a doctor examining the patient in person. A TV set in the doctor's office will give him the picture even if the patient is thousands of miles away.

A nation-wide audience saw a demonstration of this new diagnostic method on Sunday, April 26, when Dr. William S. Love of the University of Maryland demonstrated how the unit can diagnose different forms of heart disease and detect stomach ulcers.

Science News Letter, May 2, 1953

The largest deposits of anthracite *coal* in the U. S. are in eastern Pennsylvania.

When one projector begins to run faster than the other, currents flow between the selsyns through three wires. These currents cause the selsyns to act on the projector motors to keep them running at the same speed. While this happens, the audience is unaware that anything unusual is going on.

The selsyns cost about $100 each and are being produced by General Electric at its Fort Wayne, Ind., plant.

Science News Letter, May 2, 1953

DEAFNESS
Made Me a Laughing Stock...

But That Was Before This FREE BOOK Showed Me How to HEAR AGAIN!

It hurt deeply when I first found out, but now I can't blame folks for laughing at me. Some of my answers to half-heard questions must have been really ridiculous. But that's all past history now, thanks to a helpful FREE book which told me how the wonderful science of electronics had helped thousands like me to hear again with amazing ease and clarity. You, too, may find the same glorious good news in this book, so why not send for it today? It's yours 100% FREE of cost or obligation. Just mail the coupon.

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Books of the Week

For the editorial information of our readers, books received for review since last week's issue are listed. For convenient purchase of any U. S. book in print, send a remittance to cover retail price (postage will be paid) to Book Department, Science Service, 1719 N Street, N. W., Washington 6, D. C. Request free publications direct from publisher, not from Science Service.

AUTOMATION AND OTHER TECHNOLOGICAL ADVANCES—*American Management Association,* 55 p., paper, $1.25. Papers on Developments in Automation, Radioactive Isotopes in Industry, and Materials Substitution.

BENJAMIN BRITTEN: A Commentary on His Works from a Group of Specialists—Donald Mitchell and Hans Keller, Eds.—*Philosophical Library,* 410 p., illus., $7.50. For those interested in the appreciation of contemporary music, this covers the career and works of the composer of "Peter Grimes."

CACTI AND SUCCULENTS—G. Gilbert Green—*Pitman,* 238 p., illus., $7.00. Describes, classifies and gives information on the cultivation of plants that can withstand long periods without water.

DOWN IN THE HOLLER: A Gallery of Ozark Folk Speech—Vance Randolph and George P. Wilson—*University of Oklahoma Press,* 320 p., $5.00. Deals with many phases of Ozark speech, including pronunciation, grammar, early English survivals, taboos, euphemisms, etc.

EXPERIMENTS WITH AIRPLANE INSTRUMENTS—Nelson F. Beeler and Franklyn M. Branley—*Thomas Y. Crowell,* 115 p., illus., $2.50. Explains the function of airplane instruments from the simplest type of fuel gauge to the complex gyro mechanisms, with 16 experiments. Ages 10-14.

THE FIRST BOOK OF SPACE TRAVEL—Jeanne Bendick—*Franklin Watts,* 69 p., illus., $1.75. Tells what space is, how we will probably reach it, and what we are likely to find there. Ages 7-12.

FLYING WINDMILLS: The Story of the Helicopter—Frank Ross, Jr.—*Lothrop, Lee & Shepard,* 192 p., illus., $2.75. Portrays every type of helicopter in the air, and sketches the future of the craft now being designed. For teen-agers.

FROM SAVAGERY TO CIVILIZATION—Grahame Clark—*Schuman,* 116 p., illus., paper, $1.00. Traces the story of man's development up to the dawn of civilization, when men started to live in villages.

THE HARVEY LECTURES: Delivered under the Auspices of the Harvey Society of New York, 1951-1952—A. R. Todd et al—*Academic Press,* Series XLVII, 271 p., illus., $7.50. Nine papers on various subjects such as The Nucleotides, Morphogenesis and The Metamorphosis of Insects, etc.

HIGHWAY PLANNING AND URBAN DEVELOPMENT — Highway Research Board — *National Academy of Sciences-National Research Council,* Bul. 64, 12 p., paper, 30 cents. A discussion of the effect of the automobile on decentralization, and the need to integrate highway planning and the redevelopment of blighted areas.

HOW TO KNOW AND PREDICT THE WEATHER—Robert M. Fisher—*New American Library,* 167 p., illus., paper, 35 cents. An explanation of the processes which make up the weather, including the basic facts that allow you to be your own forecaster.

HYDROMETALLURGY OF BASE METALS—George D. Van Arsdale, Ed.-in-Chief—*McGraw-Hill,* 370 p., illus., $9.50. Shows how to recover base metals by leaching, with special reference to copper.

IMMUNITY, HYPERSENSITIVITY AND SEROLOGY—Sidney Raffel—*Appleton-Century-Crofts,* 531 p., illus., $8.00. Describes the phenomena of immunity in basic terms, especially with regard to resistance to bacteria, viruses and toxins.

INDIAN TRIBES OF NORTHERN MATO GROSSO, BRAZIL—Kalervo Oberg—*Government Printing Office,* Smithsonian Institution, Institute of Social Anthropology Publication No. 15, 144 p., illus., paper, $1.00. This covers the Camayurá, the Bacairí, the Nambicuara and the Umotina Indian tribes.

I REMEMBER—Dexter S. Kimball—*McGraw-Hill,* 259 p., illus., $4.00. The autobiography of an emeritus professor of mechanical engineering at Cornell, and past president of the American Society of Mechanical Engineers.

THE LIVING BRAIN—W. Grey Walter—*Norton,* 311 p., illus., $3.95. A history of the evolution of the brain, the invention and perfection of the electroencephalograph machine, and its clinical use for the diagnosis of brain afflictions.

LOGIC FOR MATHEMATICIANS—J. Barkley Rosser—*McGraw-Hill,* 530 p., $10.00. Seeks to convey to mathematicians a precise knowledge of the logical principles which they use in their daily mathematics.

THE MEANING OF LOVE — Ashley Montagu, Ed.—*Julian Press,* 248 p., $3.50. A group of modern thinkers examine and evaluate love as a major motivating and driving force in human society.

MISS PICKERELL AND THE GEIGER COUNTER—Ellen MacGregor — *Whittlesey House,* 123 p., illus., $2.25. To help children (ages 8-12) learn about atomic science, radiocarbon dating, etc.

MODERN HEBREW — Eliezer Rieger — *Philosophical Library,* 156 p., $3.75. Presents a complete program for teaching Hebrew as a modern spoken language.

THE PARAKEET OWNER'S HANDBOOK — *Will Gerber,* 32 p., paper, 25 cents. Answers the questions of owners of this increasingly popular bird.

PHYSIOLOGICAL FOUNDATIONS OF NEUROLOGY AND PSYCHIATRY—Ernest Gellhorn—*University of Minnesota Press,* 556 p., illus., $8.50. Based primarily on the physiological, clinical and psychological research of the author.

POWER PLANTS FOR AIRCRAFT—Joseph Liston *McGraw-Hill,* 577 p., illus., $8.50. An undergraduate text presenting accurate and comprehensive comparisons of the many types of jet and reciprocating power plants.

PREHISTORIC SETTLEMENT PATTERNS IN THE VIRU VALLEY, PERU—Gordon R. Willey—*Government Printing Office,* Bureau of American Ethnology, Bul. 155, 513 p., illus., $4.00. The results of a study made in 1946.

RELAX AND LIVE — Joseph A. Kennedy—*Prentice-Hall,* 205 p., $3.95. A program intended to relieve anxiety, strain and sleeplessness through the author's method of relaxation.

RICE VARIETIES AND THEIR YIELDS IN THE UNITED STATES, 1939-50—J. W. Jones, C. R. Adair, H. M. Beachell, N. E. Jodon and A. H. Williams—*Government Printing Office,* 28 p., illus., paper, 15 cents. The results of experiments conducted in Arkansas, Louisiana, Texas and California.

THE SCIENTIFIC ADVENTURE: Essays in the History and Philosophy of Science — Herbert Dingle — *Philosophical Library,* 372 p., illus., $6.00. Lectures dealing primarily with astronomy and physics, but also including sections on the relation between science and the humanities and religion.

THE SLIDE RULE—H. W. Leach and George C. Beakley—*Macmillan,* 44 p., illus., paper, $1.00. An explanation and discussion of slide rule operation. With drill problems.

STARCH: Its Sources, Production and Uses—Charles A. Brautlecht—*Reinhold,* 408 p., illus., $10.00. Major emphasis is placed on white potato starch, but full information is included on other starch sources such as sweet potatoes, corn, tapioca, wheat and rice.

THE STORY OF OUR TIME: Encyclopedia Yearbook, 1953—E. V. McLoughlin, Editorial Director—*Grolier Society,* 432 p., illus., $4.95. A summary by specialists of the important events of last year.

TALL TIMBER PILOTS—Dale White and Larry Florek—*Viking Press,* 223 p., illus., $3.50. The story of a pioneer forest fire-fighting aviation business in Montana.

TEXTILE FIBERS, YARNS, AND FABRICS: A Comparative Survey of Their Behavior with Special Reference to Wool—Ernest R. Kaswell—*Reinhold,* 552 p., illus., $11.00. An annotated and interpretive bibliography describing and discussing the research results of some 400 investigators.

THE UNIVERSE OF MEANING—Samuel Reiss—*Philosophical Library,* 227 p., $3.75. Covers the various aspects of the relation of meaning to its symbol or expression.

VIRUS AND RICKETTSIAL CLASSIFICATION AND NOMENCLATURE — Roy W. Miner, Ed. — *New York Academy of Sciences,* Annals, Vol. 56, Art. 3, 241 p., illus., paper, $4.00. Specific virus groups are discussed with regard to the special problems which each presents in further classification.

WHAT IS HISTORY? — V. Gordon Childe—*Schuman,* 86 p., illus., paper, $1.00. Reviews the changing conceptions of history which have characterized past epochs.

THE WONDER WORLD OF INSECTS — Marie Neurath—*Lothrop, Lee & Shepard,* 36 p., illus., $1.50, cloth $1.85. Encourages nature observation in children, ages 8-12.

WONDERS OF THE TREE WORLD—Margaret Cosgrove—*Dodd, Mead,* 92 p., illus., $2.50. Encourages children 8 years old and up to observe the traits and mechanisms of trees.

What General Electric people are saying . . .

J. H. HAGENGUTH

Mr. Hagenguth is Manager of the Company's High Voltage Engineering Laboratory.

". . . Thanks to the lightning hunters, among them such illustrious names as Steinmetz, Peek, McEachron, Foust, and Lewis of the General Electric Company, Gross of the American Gas & Electric Company, Schonland in South Africa, and others, we now have a fairly complete story on the lightning stroke formation and the currents involved. We have learned that a lightning stroke generally starts at the cloud in the form of a short streamer of about 150-foot length. This streamer hesitates for about 50 millionths of a second or 50 microseconds and then advances another 150 feet. This process is continued more or less regularly until the streamer reaches the earth after about 1/100 of a second from the start. Here charges of opposite polarity have meanwhile accumulated and as the streamer makes contact, there occurs an interchange of charges at a rate about 100 times as great as the streamer advance. A so-called current peak is produced which may have as much as 200,000 amperes of crest current traveling upward toward the cloud. This is the lightning component that shatters trees and houses.

Probably no two strokes are ever alike. However, we now know quite well the range of the important characteristics of lightning stroke current peaks, such as the time it takes to reach its crest, how slow or how fast it decays, the range of its current amplitudes. All these factors are of importance in the equipment protective field.

In our Pittsfield High Voltage Laboratory we can now develop voltages up to 15,000,000 volts and currents as high as 250,000 amperes. We, therefore, can cover the entire field of effects of lightning on our electrical installations.

G-E Science Forum
Station WGY, Schenectady

E. S. LEE

Mr. Lee, a past president of the AIEE, is editor of the General Electric "Review."

". . . Every engineering student is continually wondering what is beyond his student life, what is ahead of him in the great adventure in which he has made a start. The step into industry looms large. The picture of the road ahead is never clear.

And yet this need not be. If he will only realize it, he has been privileged to have the opportunity to obtain the finest education it is possible to provide.

He has learned of the phenomena of Nature in his physics, which is fundamental. He has learned of the materials of Nature in his chemistry, and with these he will live throughout his engineering life. He has learned to write a phenomenon of Nature in the one-line equation of mathematics, to operate upon that equation to obtain a relationship of the variables involved, and to plot those variables in order to see the phenomenon in all its beauty and its usefulness.

For the phenomena of Nature are beautiful, and it is to the honor of the scientist and the engineer to search them out and make them available to mankind in the products of industry. These are the prize possessions of the engineering student; and industry provides him with the opportunity to make use of them. This is not new. It has always been that way.

The opportunities for new advances never cease. Even after 75 years of continuous engineering achievement, the engineer is still opening new doors. Whether these lead to the development of new products, or to the improvement of present ones, they represent opportunities for every engineer. Of these there is no end. Engineering *is* a great adventure.

General Electric Review

J. W. BELANGER

Mr. Belanger is Vice President, Defense Products Group.

". . . The General Electric Company is devoting 30% of its over-all effort to defense production. We are proud to be in a position to make such a large contribution to the greatest cause of all—keeping our Country free from aggression. We are devoting our efforts only to those areas where a definite contribution can be made, i.e., jet engines, fire control systems for both aircraft and ships, guided missiles, and some of the most complicated systems ever to be devised by man.

The characteristics of deliberate invention, of relentless research and development, are the sign posts of our Company's progress. To these we must add the priceless quality of patience—of being able to live serenely in a dangerous world. We must learn there is never going to be a return to "normal times," at least in the terms in which we used to think of those words. Rather we should think of the cold war and mounting defense expenditures as the years roll by as "normal" in our American picture.

We in General Electric are not devoted to the arts of war, but we are deeply aware of our responsibility to serve our nation in whatever way we can do it best. I am completely confident we will meet the challenge our country has placed upon us.

Lynn, Massachusetts

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GENERAL ELECTRIC

MEDICINE

Sick Certificates Put Soviet M.D.s on Spot

➤ SOVIET DOCTORS have their troubles. Those of the 12 arrested on charges of plotting murder of high communist officials and then released were dramatic. But each Soviet man in white has everyday problems that could end disastrously for him.

Some of these are reported by Mark G. Field, fellow of Harvard University's Russian Research Center.

In addition to trying to diagnose his patient's ailment, the Soviet doctor must be able to detect whether the patient is really sick or malingering. A mistake either way could get him into serious trouble.

Soviet law penalizes a worker a maximum deduction of 25% of his income for a 20-minute tardiness. This puts a high premium on the official sick certificate signed by a physician which would give the worker a sure way of escaping punishment.

But quotas of excuses are established and a doctor who exceeds his norm would have to account for it. The doctor therefore often has to look helplessly on while refusing medical help to those who need it or refusing dispensation to those who morally deserve it.

The doctor lives always in fear of agents provocateurs who, coming in the guise of patients, may entice him into an illegal action and report him to the authorities.

In addition, patients and their relatives may take revenge on the doctor by lodging grievances with a labor union, with the ministry of health, or, in extreme cases, with the organs of justice.

This may have dire consequences, Mr. Fields points out, especially if the state is interested in arranging a demonstration trial to display its concern for the welfare of the toilers.

Mr. Field's report, based on interviews with 21 former Soviet physicians and medical personnel and questionnaires completed by 1,600 former Soviet citizens in a survey made in Germany in 1950-1951, is published by the University of Chicago.

Science News Letter, May 2, 1953

Lard oil was the first cutting *lubricant* machinists used.

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HORTICULTURE

NATURE RAMBLINGS

Whence May Flowers?

➤ PERENNIALLY, as sure as it rains in the spring, we hear the chirping reassurance: "April showers bring forth May flowers!" This is true in a way, but in a larger way it is not.

It is true that the warm rains of April trigger the explosion of bloom that comes in May. They provide moisture to fill the rapidly expanding leaves and stems and flower-buds, and the warmth speeds up the growth. But it could be possible for flowers to bloom in May if not a drop of rain fell in April—though that latter contingency is hardly imaginable in most places. If there were deep snows and a slow thaw in March, and a bit of rain as May came in, the flower show would still go on.

For the flowers are all there long before April showers evoke them. Packed away as fairly well-developed, though small, beginnings in bulbs, corms, rootstocks, tubers are the leaves and stems and flowers that will unfold as the rising warmth stimulates them and as they greedily suck moisture through the roots into their expanding cells.

You can prove this for yourself, if you like, by sacrificing a hyacinth or tulip bulb, splitting it fairly down the middle and searching for the tightly-packed flower primordia within the innermost scale.

In most spring-blossoming plants, the flowers and new leaves that gladden our eyes in May are actually formed and put in winter storage some time during the preceding year. This is certainly true of flowers on woody plants, such as lilacs, magnolias and tulip-trees, in which next year's buds begin to form even as this spring's buds begin to unfold. It is true also of the perennial herbs that depend on underground storage organs, which are stocked with food, principally starches and sugars, during the post-flowering time in late spring and summer.

But it is not merely the forming and stocking of what are to be next spring's flowers that predetermine the beauty we are to see in May. Winter helps, too. A very large proportion of our best spring flowers will not unfold unless they get a thorough chilling after the buds are formed. This is true of such familiar and favorite flowers as dogtooth violet, trillium, spring beauty, lily-of-the-valley and many others. April showers may bring forth May flowers, but December freezes must come first.

Science News Letter, May 2, 1953

ENTOMOLOGY

Fruit Fly Invader

➤ LIKE THE "wetbacks" who secretly cross the Rio Grande to enter the United States, the Mexican fruit fly has broken past our border guards and established itself in lower Rio Grande Valley citrus orchards.

To keep the fruit fly from spreading, the U. S. Bureau of Entomology and Plant Quarantine is now requiring heat sterilization of all grapefruit, the principal citrus crop, from this area that will cross state lines.

The Mexican fruit fly, which causes an estimated 30% loss in Mexican citrus crops annually, has been known in the Brownsville, Texas, area for many years, but prompt and continuous action of the government entomologists has kept it under control. The fly has never become established in the U. S. outside the Rio Grande valley.

This season, however, citrus growing in the valley has reached largest proportions than at any time since 1948, when frost severely damaged the orchards. And along with increased citrus production has been an increased abundance of the pesty fruit flies, which lay their eggs in the fruit.

In the sterilization process, the grapefruit are placed in very moist air raised to a high temperature. This kills any fly eggs and larvae present without damaging the fruit.

Science News Letter, May 2, 1953

GEM Testing

By B. W. ANDERSON
Director, Precious Stone Laboratory, London

A book for gem collectors, dealers, jewelers, students, gem hunters, etc. Practical, clear, detailed, specific, and easy to use.

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ENTOMOLOGY

Insect Fight Continues

Department of Agriculture pares budget by cutting out certain pest control programs where government efforts have reached point of diminishing returns. States will handle.

➤ IN SEARCH of savings, Secretary of Agriculture Benson ordered the Bureau of Entomology and Plant Quarantine to find about a 10% cut in its pest control program.

The bureau responded by paring off $676,900 from Japanese beetle, sweet potato weevil and a pair of peach virus disease controls, which would virtually end Federal quarantine of these pests. But the bureau would not touch its previous appropriations requests for the remaining pest controls.

SCIENCE SERVICE asked Dr. Lee W. Popham, assistant chief of the bureau, why it decided to end some controls while asking for more money on other pest problems. Why was the budget cut not distributed among all the control projects? Have the Japanese beetle, sweet potato weevil and the peach viruses been conquered?

Federal work in pest control, Dr. Popham said, is generally aimed at preventing spread of the pests into uninfested parts of the country through quarantine and inspection. The bulk of pest eradication measures in a given area is carried on by state, local and private means, though often with Federal cooperation.

With the Japanese beetle, sweet potato weevil and the phony peach and peach mosaic diseases, Federal efforts have reached a point of diminishing returns. These pests have become well established in certain parts of the country and farmers and the state authorities have learned what must be done to "live with them."

As was the case of the cotton boll weevil, it has become the farmers' personal responsibility to fight these pests on his land. The states can effectively and cheaply handle the inspection and quarantine of these pests, Dr. Popham said.

Infested states have been warned for several years now that the time was approaching for them to take over this work. Secretary Benson's order to cut the budget furnished the push that was required to put this plan into effect.

But with the other insect and plant disease pests under Federal control, the story is different. They have not become so widely established like the Japanese beetle, or subdued like the peach mosaic, that Federal control is still not absolutely indispensable.

It would be disastrous, for instance, to slacken efforts against the golden nematode, a highly destructive pest of Irish potatoes. This minute "worm" is completely confined to Long Island, New York. But if it managed to spread into the potato fields of Maine, Idaho and other large producing areas, it would create havoc. The budget calls for $344,900 to keep the golden nematode in bounds; without this control, the potato industry would lose millions of dollars to the pest.

The Hall scale, a tiny sucking insect that attacks peaches and almonds especially, invaded this country in 1934. It has been confined to one small area near Chico, Calif., however, and is one of the few insect pests that may be totally eradicated from U. S. soil.

This is why the Bureau of Entomology and Plant Quarantine cannot let up against this insect. By spending $117,200 a year now, the Hall scale may be destroyed, to save millions in later years.

Other insect and plant disease pests on the bureau's "must" list for control are: the citrus blackfly and Mexican fruit fly; barberry, host of the wheat stem rust fungus; pink bollworm; white-fringed beetle; gypsy and brown-tail moths; and grasshoppers and Mormon crickets.

A special contingency fund is always available for use against sudden outbreaks of new insect pests or plant diseases, or unexpected increases in old pest problems.

The total appropriations asked under the Eisenhower budget for pest control is $4,923,100. The Truman budget called for $5,600,000.

Science News Letter, May 2, 1953

Trash and brush should be burned in the evening, not in the morning; many *fires* started in the morning get out of control because the outdoor temperature rises, the humidity drops and the wind picks up.

Boxwoods can be kept in better condition with some of the new insecticides which are more effective than older materials in controlling pests of these ornamental shrubs.

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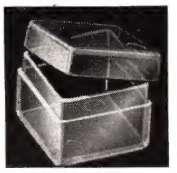

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Questions

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Photographs: Cover, W. Arthur Young; p. 275, Ryan Aeronautical Co.; p. 277, T. L. Gunn; p. 282, U. S. Signal Corps; p. 288, Radiation Counter Laboratories, Inc.

MEDICINE

Breath Shortness, Sore Throat Smoker's Asthma

➤ A GOOD many people who are short of breath and wheeze asthmatically, and have frequent sore throat colds probably are suffering from smoker's asthma.

Dr. George L. Waldbott of Detroit reported on this newly discovered disease in the *Journal of the American Medical Association* (April 18).

His own experience with the disease had led him to recognize it in more than 30 of his patients and to suspect its existence in many more of the population. A feeling of tightness in the throat and upper air passages and pain in the chest are other symptoms.

The remedy, amounting to cure in most cases: Stop smoking.

Science News Letter, May 2, 1953

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• New Machines and Gadgets •

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⚙ *WEED DABBER, an applicator for liquid weed killers, allows the user to rid his lawn chemically of weeds without back-breaking toil. Working on the end of a long stick, the device holds 16 ounces of 2,4-D weed killer which is "dabbed" on the plant through a sponge on the applicator.*

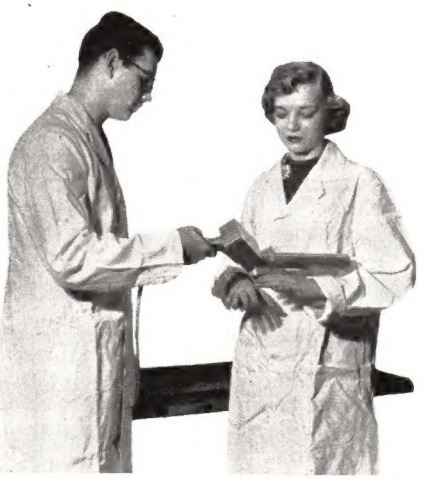
Science News Letter, May 2, 1953

⚙ *KITCHEN UNIT combines a sink, refrigerator and an ovenless range into a compact unit requiring only five square feet of floor space. It is especially useful in apartments, resort cabins, motels, hospitals and offices. The units can be obtained either with electric or gas burners.*

Science News Letter, May 2, 1953

⚙ *WHEEL BALANCING set for cars consists of four disks, one for each wheel, having mercury-filled cylinders. Mounted inside the wheel rim around the axle and covered by the hub caps, the disk "dynamically balances" the wheel, eliminating the need for balance weights. The disks are said to make the tires wear evenly, to make the car ride more smoothly on rough road and to cut the "pounding" of unbalanced wheels at high speeds.*

Science News Letter, May 2, 1953



⚙ *ALPHA COUNTER, shown in the photograph, checks large areas quickly for possible radioactive contamination. Operating on ordinary 115-volt, 60-cycle current, the device causes a loudspeaker to "pop" whenever an alpha particle is detected.*

Science News Letter, May 2, 1953

⚙ *WHEELBARROW can be converted from a rugged garden tool into a portable barbecue by a special grill and charcoal firebox. The wheelbarrow's baked-on finish is heat resistant and easy to keep clean. As a garden tool, the wheelbarrow's puncture-proof, semi-pneumatic broad-surfaced tire carries the load easily without digging into the earth or marring the lawn.*

Science News Letter, May 2, 1953

⚙ *DRIP-CATCHER is a wire-like device that clamps to pitchers on the pouring spout and catches that last drip that often stains table linens. The rustproof device fits coffee pots, tea pots and most cream pitchers.*

Science News Letter, May 2, 1953

⚙ *REVOLVING BRUSH with a built-in "sudser" that takes powdered detergents attaches to a garden hose and works on high or low water pressure. The revolving brush, fitted with horsehair bristle, cleans cars, windows, walls and boats.*

Science News Letter, May 2, 1953

⚙ *MANICURE SET for men fits into a small dark-green leather case and can be carried easily in a watch pocket. The set includes triple-nickel-plated steel scissors, a tiny nail file, two different styled cuticle pushers and a pair of tweezers.*

Science News Letter, May 2, 1953

An extra fillip for every week . . .

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Do You Know?

About two-thirds of the *rubber* used in the U. S. in 1952 was synthetic.

Three of *Shakespeare's works* recently were translated into Zulu, an African language.

When frightened, the *springbok*, a timid antelope-like animal, leaps high in the air, sometimes reaching 12 or 13 feet.

When intelligence tests came into use it was found that about two percent of the general population never reach adult *mental level.*

Parts of the human *brain* concerned with thinking are more localized than similar areas in the brains of animals such as monkeys, chimpanzees and cats.

More tons of *aviation ordnance*—such as bombs, rockets and machine-gun ammunition—have been expended in Korea by the Navy and Marine Corps than were expended by them during all of World War II.